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#### 54 PIN FOR SURGICAL SUTURE DEVICE.

57 Pin contains a support head (2) and compound shaft (1) which consists of two part shafts (5 and 6) of different lengths on one of which, the part shaft (5), the supporting head (2) is mounted, with this part shaft (5) being fixed relative to the other part shaft (6).

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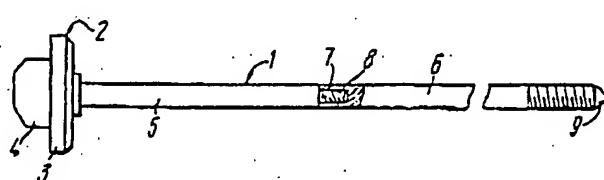


Fig. 1

## PIN FOR SURGICAL SUTURE DEVICE

### Technical area

The present invention relates to surgical means, in particular it concerns pins for a surgical suture device.

### Underlying state of the art

A pin for a surgical suture device that is executed as a shaft, is already known (GB-A-2133735). At one end of the latter is attached a matrix for bending the clips together by means of a nut. The ends of the organ to be sutured together are fixed on the above-mentioned shaft by means of a purse-string suture.

Another pin for a surgical suture device is also known, executed as a shaft that bears a support head on one end. In order to put on an annular anastomosis, the tissue of one of the organs to be sutured together is previously fastened on this shaft by means of a purse-string suture (SU-A-906540; SU-A-906541).

The pin pulled out of the suturing device is very long, due to which the performance of the operation using it on sections with limited space becomes impossible. Over and above this, an additional purse-string suture must be put on the tissue mounted on the pin during the operation when this known pin is used. The innumerable disadvantages lead to a reduction in the assurance of asepsis and to a rise in vulnerability in the course of the operation.

### Disclosure of the invention

The present invention is based on the problem of developing a pin for the surgical suture device that makes it possible, by changing its length, to dispense with the placement of a purse-string suture on the biological tissue placed on this pin.

The problem posed is solved by the fact that in the pin intended for the surgical suture device, which provides for a shaft for the placing of annular anastomoses on organs of the digestive tract, on one end of which is mounted a support head for the forming of the suture, according to the invention this shaft is made up of two part shafts of different lengths, of which the part shaft with the support head is shorter than the other part shaft and can be fixed in relation to this other part shaft.

The part shaft with the support head can moreover be executed so as to facilitate the piercing of the organ to be sutured together.

To achieve this possibility of piercing the organ to be sutured together, the free end of the shaft with a support head is expediently executed pointed.

Possibly, the shaft can include a removable extension attached to the free end of the part shaft with the support head.

The execution under consideration of the pin for the surgical suture device offers the possibility of being able to dispense with the placement of a purse-string suture on the biological tissue on the pin, and brings with it the conditions necessary for operations on sections in limited space.

### Brief description of the invention

The invention, is illustrated below in more detail by means of the description of examples of its execution and attached drawings, in which:

Fig. 1 shows the invention pin for the surgical suture device;

Fig. 2 shows an invention part shaft of the shaft, showing the pointed end;

Fig. 3 shows another variant in the execution of the invention pin;

Fig. 4 shows the position of the invention pin relative to the organ to be operated on;

Fig. 5 shows the position of the invention pin in relation to the organ to be operated on after the latter is pierced;

Fig. 6 shows a variant of the utilization of the invention pin in the surgical suture device.

#### Best variant of the execution of the invention

The pin for the surgical suture device serves for the placing of annular anastomoses on organs of the digestive tract. The pin provides for a shaft 1 (Fig. 1) on one end of which is arranged a support head 2 for the forming of the suture [typo, in original] of the annular anastomosis. The support head 2 is executed in its construction in the usual way and contains a connecting ring 3 that is attached firmly to the shaft 1 by means of the nut 4.

The shaft 1 consists of two part shafts 5 and 6 of different lengths, with the part shaft 6 of the shaft 1 having a greater length than the part shaft 5 with the support head 2 although, for the sake of simplicity and convenience in the graphic representation, the part shaft 6 in Fig. 1 and the other figures is reproduced partly shortened.

The part shaft 5 is for example held relative to the other part shaft 6 by means of a threaded stem 7 and a threaded borehole 8.

The pin is executed in such a way that with its help the organ to be sutured together can be pierced, for which its free end, in particular the free end 9 of the part shaft 6, is executed pointed.

However, it is shown to be convenient, for carrying out operations on the difficult-to-access sections of the body of patients or in a constricted operating field, to construct the free end 10 (Fig. 2) of the part shaft 5, whose length is in general smaller than that of the other part shaft 6 (Fig. 1), with a point.

In Fig. 3, a variant in the execution of the part 5 of the shaft 1 is shown, which contains a removable extension piece 11 that is fixed with its borehole 12 on the threaded stem 7 of the free end of the above-mentioned part 5 of the shaft 1 and displays its other pointed end 13.

In Figs. 4 and 5 are shown some phases of the operation that are performed with utilization of the invention pin. First, the pin is disassembled into its two parts 5 and 6 and, through a slit 14 made in the part 15 to be cut off from an organ, for example the stomach 16, is introduced into the cavity of the stomach 16, so that after the part 15 is cut off it still remains inside the cavity of the stomach 15 [sic]. Then the pin is oriented in the stomach and the pointed end 13 of the extension piece 11 is turned in the direction of the piercing of the wall of the stomach 16.

An operation with the aid of the pin takes place with utilization of the surgical suture device as follows.

After the wall of the stomach 18 is penetrated by means of the extension piece 11, this extension piece 11 is taken from the part 5 of the shaft 1 with the support head 2, while the part shaft 6 (Fig. 6) attached to the suture device is firmly clamped in the latter. The above-mentioned suture device includes its housing 17, a needle device 18, a plunger 19 and a hollow tube 20 through which the shaft 1 of the pin passes. The suture device is accommodated inside the anastomotic intestine 21. After this, the connecting ring 3 on the support head 2 is put in contact with the ring 22 of the needle device 18, and the tissues of the organs to be sutured together, the stomach 16 and the intestine 21, are pierced through with the needle 23 fastened on the ring 24 of the needle device 18. After this, the opening of the anastomosis is cut out with the cylindrical knife 25, whereupon the whole suture device and the pin without the connecting ring 3 are taken out of the cavity of the intestine 21 in the usual way.

By means of the suture device in which the invention pin had been utilized, 35 anastomoses were placed on the stomach and small intestine. The operations went smoothly and no complications were indicated.

By avoiding the purse-string suture on the tissue pushed on to the pin, the utilization of the invention pin made it possible to greatly improve the conditions of asepsis, diminish the danger of the emergence in each case of complications that can otherwise occur due to possible ejection of the tissue bound by the purse-string suture from the region of the mechanical suture.

#### Industrial utilization

The above-mentioned invention can find its application in operations on organs of the gastrointestinal tract.

#### Claims

1. Pin for a surgical suture device that is intended for the placing of annular anastomoses on the organs of the digestive tract, that has a shaft (1) on one end of which is provided a support head (2) for forming the annular anastomosis, characterized by the fact that the shaft (1) is composed of two part shafts (5 and 6) of different lengths, of which the part (5) of the shaft (1) with the support head (2) is shorter than the other part of the shaft (6) and is fixed in relation to this other part shaft (6) of the shaft (1).
2. Pin as in Claim 1, characterized by the fact that the part (5) of the shaft (1) with the support head (2) is constructed to facilitate the piercing of the organ (16) to be sutured together.
3. Pin as in Claim 2, characterized by the fact that to facilitate the piercing of the organ (16) to be sutured together, the free end (10) of the part (5) of the shaft (1) with the support head (2) is executed in a point.
4. Pin as in Claim 2, characterized by the fact that to facilitate the piercing of the organ (16) to be sutured together, it is equipped with a removable extension piece (11), with a pointed free end (13), which is fixed on the free end of the part (5) of the shaft (1) with the support head (2).

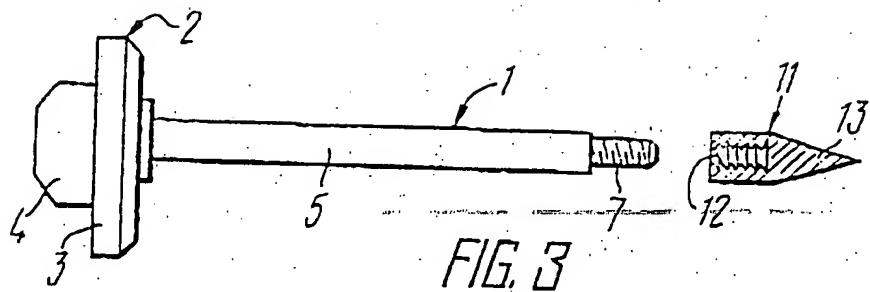
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FIG. 3

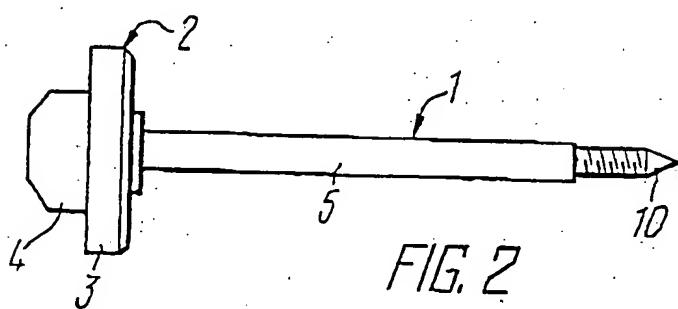


FIG. 2

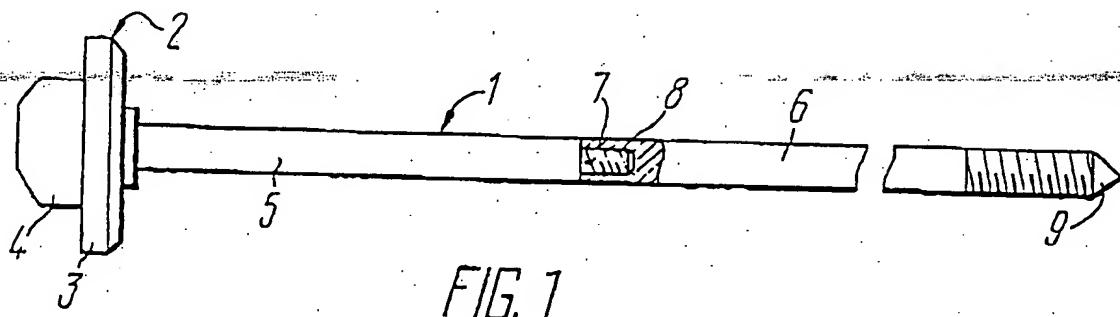


FIG. 1

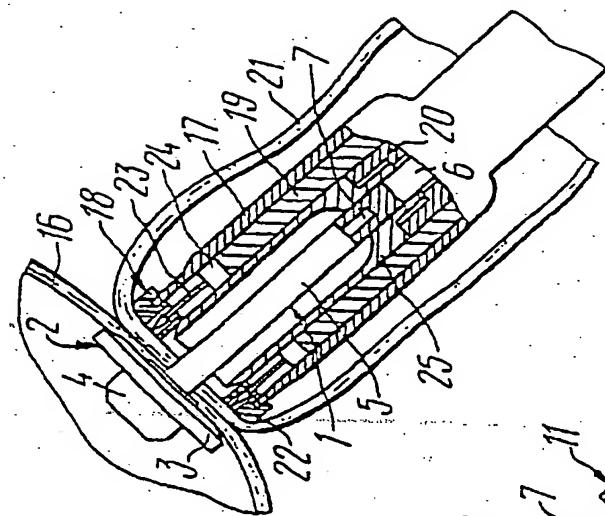


FIG. 6

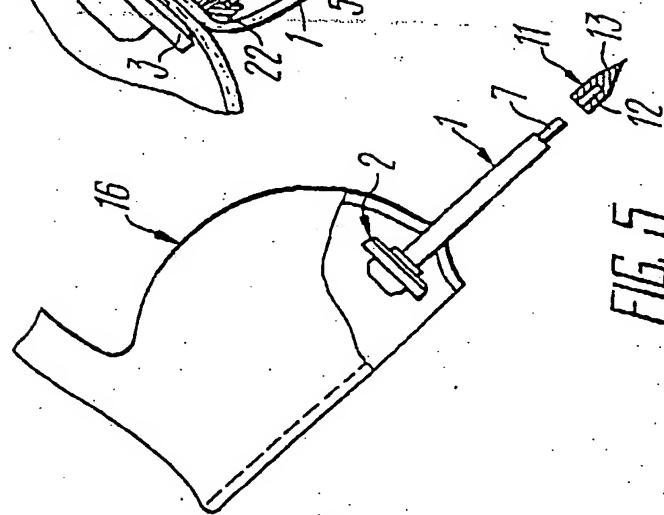


FIG. 5

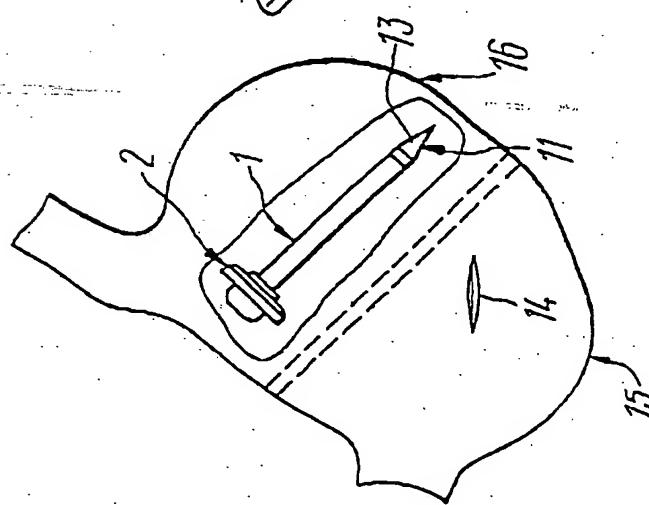


FIG. 4